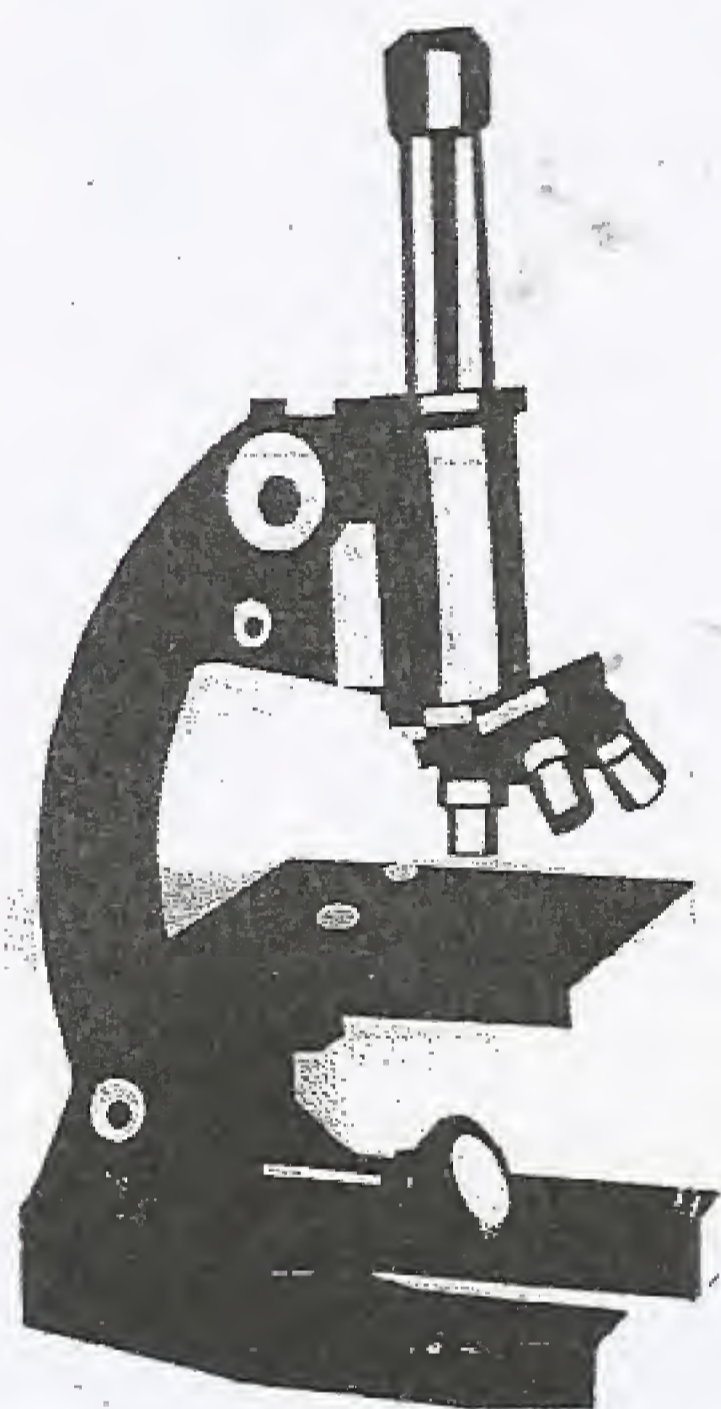


HISTOLOGY PRACTICAL GUIDE BOOK

HISTOLOGY I LABORATORY SLIDES

BASIC BODY TISSUE HISTOLOGY



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مركز الاوائل للخدمات الطلابية

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Practice 1: Microscope

A

PARTS OF THE LIGHT MICROSCOPE

A. EYEPIECE
Contains the **OCULAR** lens

B. NOSEPIECE
Holds the **HIGH-** and **LOW-** power objective **LENSES**; can be rotated to change **MAGNIFICATION**.

C. OBJECTIVE LENSES
Magnification ranges from **10 X** to **40 X**

D. STAGE CLIPS
HOLD the slide in place

E. STAGE
Supports the **SLIDE** being viewed

F. LIGHT SOURCE
Projects light **UPWARDS** through the diaphragm, the **SPECIMEN**, and the **LENSES**

K. ARM
Used to **SUPPORT** the microscope when carried

J. COARSE ADJUSTMENT KNOB
Moves the stage up and down for **FOCUSING**

I. FINE ADJUSTMENT KNOB
Moves the stage slightly to **SHARPEN** the image

H. DIAPHRAGM
Regulates the amount of **LIGHT** on the specimen

G. BASE
Supports the **MICROSCOPE**

Condenser lens:
collect & focus light that shines up through the slide

Microscope Is An Instrument That Produces An Enlarged Image Of An Object. Histologist Use Microscopes To Study Things That Are Too Small To Be Seen With Unaided Eye.

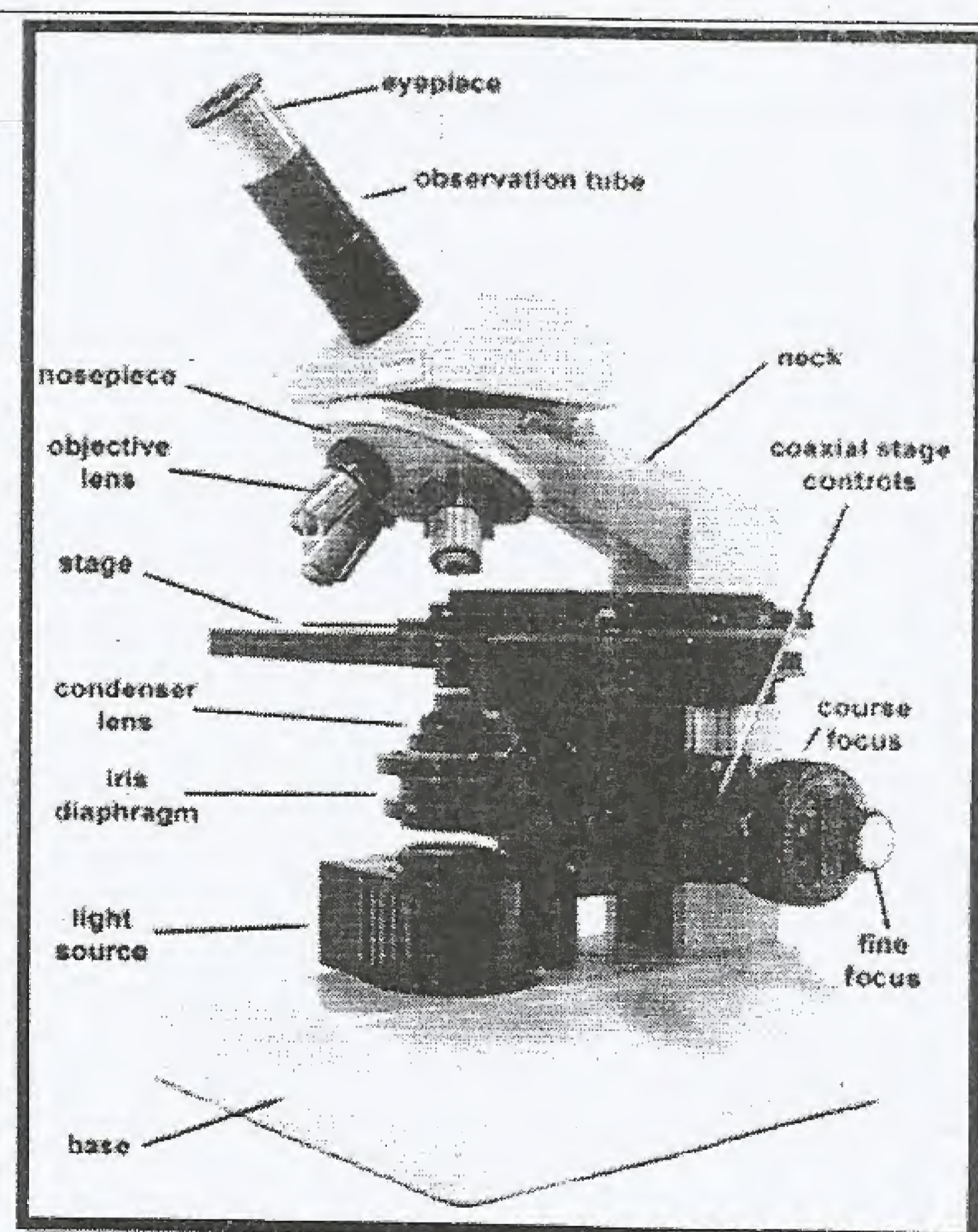
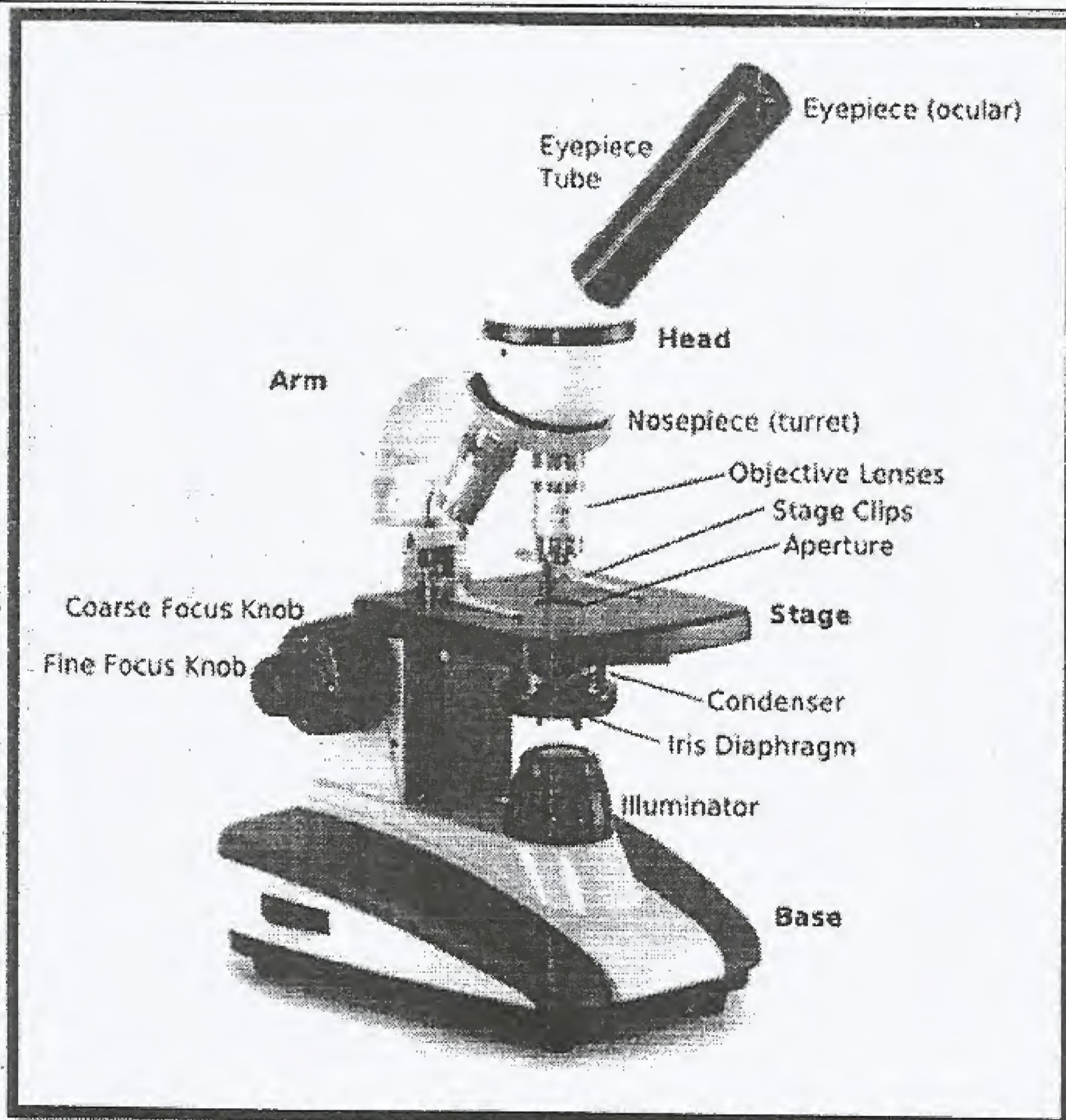
Basic Parts Of A Compound Light Microscope:

1-Optical Parts:

- **Eyepiece (Ocular) Lens:** Usually Contains A 10X Lens.
- **Objective Lens:** Basically A Housing For A Lens. Our Microscopes Have Three Objective Lenses - 4X, 10X, 40X & 100X (Oil Immersion Lens)
- **Condenser Lens:** Located Under The Stage Collect & Focus The Light That Shines Up Through The Slide. Often In Conjunction With An Iris Diaphragm.
- **Diaphragm Or Iris:** Located Under The Stage And Above The Condenser, It Is An Apparatus That Can Controls The Amount Of Light Reaching The Slide.
- **Filter**
- **Light Source:** Located Directly Under The Stage (Mirror, Electrical Lamp)

2-Mechanical Parts:

- **Arm:** Contains The Housing For The Fine And Coarse Adjustments And Connects The Base Of The Microscope To The Nosepiece And Ocular.
- **Base:**
- **Revolving Nosepiece:** A Rotating Head That Has The Objective Lenses Attached To It. The Lens To Be Used Should "Click" Into Position When The Wheel Is Gently Turned So That It Is Directly Over The Specimen Slide.
- **Stage:** Rectangle Stage, The Specimen Slides Rests On This Part Of The Microscope.
- **Clip**
- **Coarse Adjustment Knobs:** The Larger Of Two Sets Of Knobs Located On Either Side Of The Arm, Just Above The Base. This Adjustment Is Used To Make Large Adjustments In Focusing By Moving The Lenses Up And Down. *Never Use This Adjustment When Using The 40X Objective.*
- **Fine Adjustment Knobs:** The Smaller Of Two Sets Of Knobs Located On Either Side Of The Arm. This Adjustment Is Used To Make Small Adjustments In Focusing. It Has A Limited Amount Of Movement And Is Most Efficiently Used After Focusing With The 4X Objective And Coarse Focus, Then Increasing Magnification And Making Final Adjustments With The Fine Focus Knob.
- **Condenser Focus Knob:** Moves Condenser Up & Down To Control The Lighting Focus On The Specimen. Roak Or Pinion



Practice 2: Cytology I

Cell Organelles & Inclusions

Slide Of Chicken Blood (Nucleated RBC)

- 1-Cell Cytoplasm**
- 2- Nucleus**

A:Slide Organ: Spinal Ganglion

- 1-Golgi Apparatus**

B: Slide Organ: Spinal Cord(Neuron)

- 1- Nissl Bodies**

C: Slide Organ: Eye (Retina)

- 1-Pigment Layer**

Practice 3: Cytology II

Cell Nucleus & Cell Mitosis

Slide Organ: Liver

- 1-Euchromatin Nucleus**
- 2-Heterochromatin Nucleus**

Organ : Onion Root(Cell Mitosis)

- 1-Interphase**
- 2-Prophase**
- 3-Metaphase**
- 4-Anaphase**
- 5-Telophase**

Practice 4: Epithelial Tissue I

Membranous Epithelium

- Simple Epithelium

Slide Organ: Kidney (Cortex)

1-Simple Squamous Epith. (Partial Layer Of Bowmans Capsule)

2-Simple Cuboidal Epithelium (Ducts Of Kidney)

Slide Organ: Small Intestine

(^① Simple ^② Columnar Epithelium With Brush Border And ^③ Goblet ^④ Cells)

1- Simple Columnar Epith.

2-Brush Border

3-Goblet Cells

4-Lamina Propria

(Pseudo-Stratified Columnar Ciliated Epithelium With Goblet Cells)

Slide Organ: Trachea

1-Pseudostratified Columnar

2-Ciliated Epithelium

3-Goblet Cell

4-Lamina Propria

Cont. Practice 4: Membranous Epithelium

• Stratified Epithelium

Slide Organ: Esophagus

Stratified Squamous Epithelial Non Keratinized

1-Basal Columnar Cell Layer

2-Middle Cuboidal Cell Layer

3-Superficial Squamous Layer

Slide Organ: Skin

Stratified Squamous Epith. Keratinized

1-Basal Columnar Cell Layer

2-Middle Cuboidal Cell Layer

3-Superficial Squamous Layer

4-Keratin

Transitional Epithelium

Slide Organ: Urinary Bladder

1-Basal Short Columnar Cell Layer

2-Middle Cuboidal Cell Layer

3-Superficial Large Cuboidal (*With Convex Free Surface And May Be Binucleated Layer*)

Practice 5 : Epithelial Tissue II: Glandular Epithelium

Organ: Submandibular Gland .Exocrine (Compound Acinus) Gland

1-Serous Acini *pyramidal in shape*

2-Mucus Acini

Acini

3-Mixed Acini



4-Interlobular Septa

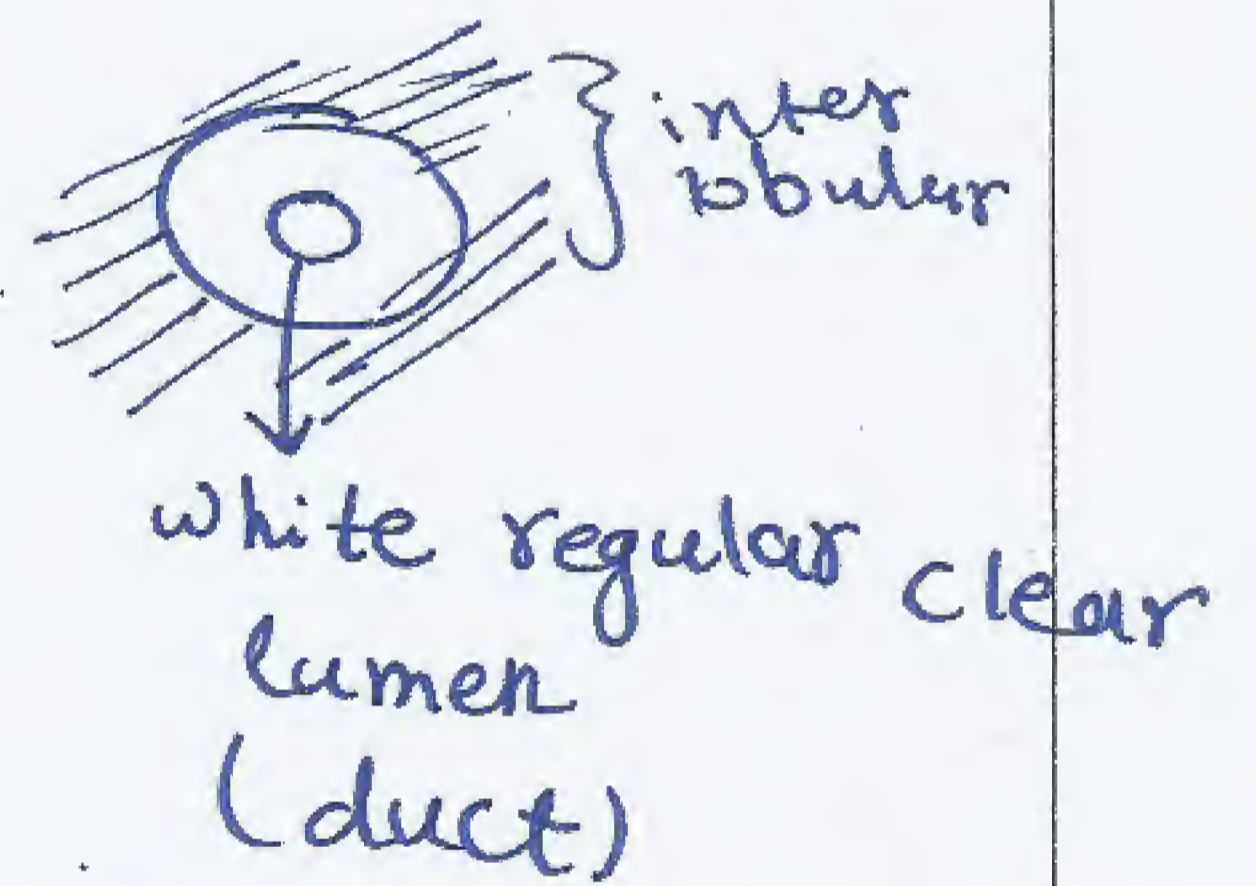
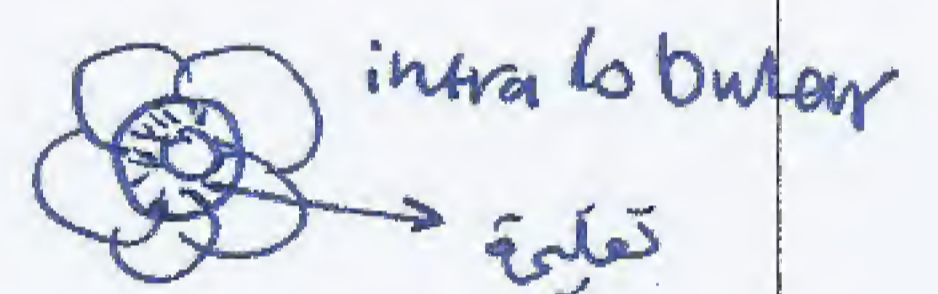
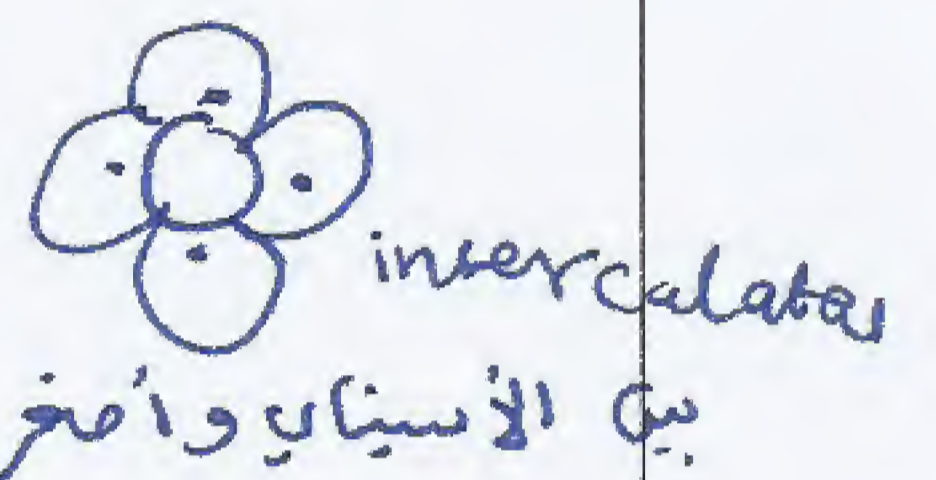
||| (C.T)

5- Interlobular Duct

" clear space / regular space)

6-Intralobular Duct

7-Intercalated Duct



can be rounded or not
irregular

- cytoplasm of duct
reddish and clear.

- " " " at serous
granular, basophil.



honey

adipose

Practice 6: Connective Tissue Proper (Loose, Dense)

Loose Areolar Connective Tissue

Slide Organ: Small Intestine

1-Areolar C.T.

2-Nucleus Of Cell Of C.T

3-Collagenous Fibers

4-Blood Vessels

5-Fat Cells

Dense Irregular Connective Tissue

Slide Organ: Skin

1-Collagen Fibers

2-Fibroblast Cells

Dense Regular Connective Tissue

Slide OF Tendon

1-Dense Regular Connective Tissue

2-Collagen Fibers

3-Tendon Cells (Fibroblast)

Practice 7: Connective Tissue Specialized; Cartilage

Hyaline Cartilage

Organ: Trachea

- 1-Mature Cartilage**
- 2-Perichondrium**
- 3-Internal Chondrogenic Layer**
- 4-External Fibrous Layer**
- 5- Cell Nest**
- 6- Cartilage Lacuna**
- 7- Chondrocyte In Lacuna (Nuclei Of Chondrocyte)**
- 8-Capsule**
- 8- Territorial Matrix**
- 9-Interterritorial (Interstitial) Matrix**

Elastic Cartilage

Slide Organ: Pinna Of The Ear

- 1-Perichondrium**
- 2- Cell Nest**
- 3- Chondrocyte (Nucleus Of Chondrocyte)**
- 4-Elastic Fibers**

Fibrocartilage

Slide Organ :Inter Vertebral Disk

- 1-Dense Irregular Collagen Fibers**
- 2- Chondrocyte In Lacunae**

Practice 8: Connective Tissue Specialized; Bone (Osseous Tissue)

Compact Bone

Organ: Diaphysis Of Long Bone

1-Haversian System

2-Haversian Canal

3-Volkmans Canal

4-Concentric Lamellae

5-Interstitial Lamellae

6-Outer Circumferential Lamella

7-Inner Circumferential Lamella

8-Bone Lacunae

9-Osteocyte In Lacunae

10- Canaliculi Across Lamellae

Practice 9: Connective Tissue Specialized; Blood Tissue

1-RBCs: Red Blood Cell (ERYTHROCYTES) Approximately
= $3.9-5.5 \times 10^6/\mu\text{L}$ in women & $4.1-6 \times 10^6/\mu\text{L}$ in men.

2-WBCs: White Blood Cells (LEUKOCYTES) = 4000-8000/ μL

A-Neutrophils

B- Lymphocytes

C- Monocytes

D- Eosinophils

E- Basophils

1-Granular leukocytes

1- Neutrophils 60-75 %

2- Eosinophils 2-4 %

3- Basophils 0- 0.5 %

2-Non-granular leukocytes

1- Lymphocytes 20-40 %

2- monocytes 3- 8 %

3- Blood Platelets (THROMBOCYTES) =150,000-400,000 / μL

Practice10: Muscle Tissue

Smooth Muscle

Slide Organ: Jejunum

- 1-Muscle Fibers (Longitudinal Section)**
- 2-Muscle Fibers (Transversal Section)**
- 3-Nucleus Of Muscle Fibers**
- 4-Connective Tissue**
- 5-Blood Vessels**

Striated Muscle ;Skeletal Muscle

Organ: Tounge

- 1- Striated Muscle Fibers (Longitudinal Section)**
- 2- Striated Muscle Fibers (Transversal Section)**
- 3- Connective Tissue { Epimysium, Perimysium,Endomysium}**
- 5-Nucleus Of Muscle Fibers**
- 6- Nucleus Of C.T Cells(Fibroblast)**
- 7- Striation Of Muscle Fiber A Band(Dark)& I Band(Light)**

Striated Muscle ;Cardiac Muscle

- 1-Cardiac Muscle (Longitudinal Section)**
- 2-Cardiac Fiber Or Cell (Transversal Section)**
- 3-Cardiac Nucleus**
- 4-Cardiac Striation**
- 5-Intercalated Disk**

Practice11: Nervous Tissue

Peripheral Nervous System

Slide Organ: Peripheral Nerve

1-Nerve Fibers

2-Neurokeratin,Myeline

3-Nucleus Of Schwann

4-Node Of Ranvier

5- Connective Tissue {Endoneurium,Perineurium}

6-Nucleus Of Fibroblast

Central Nervous System

Slide Organ: Spinal Cord (Gray Matter & White Matter)

1-Neuron

2-Perikaryon(Cell Body Or Soma)Of Neuron

3-Nucleus Of Neuron

4- Dendrites

5- Axon (Myelinated Axon In White Matter)

***{Wish You Best Of Luck From All Stuff
Members Of Histology Unit}***

